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# The Need of Vocational Education



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AMERICAN IRON AND STEEL INSTITUTE  
FRIDAY EVENING, OCTOBER THE TWENTY-FOURTH  
NINETEEN THIRTEEN  
THE BLACKSTONE  
CHICAGO

# The Need of Vocational Education

BY

THEODORE W. ROBINSON

FIRST VICE PRESIDENT, ILLINOIS STEEL COMPANY



AMERICAN IRON AND STEEL INSTITUTE  
FRIDAY EVENING, OCTOBER THE TWENTY-FOURTH  
NINETEEN THIRTEEN

THE BLACKSTONE  
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## THE NEED OF VOCATIONAL EDUCATION

THEODORE W. ROBINSON

First Vice President, Illinois Steel Company  
Chicago, Illinois

IN the development of civilization the result of all change has been for ultimate progress. The world has grown better, but change has often meant temporary retrogression, in times past even to the destruction of the highest exponents of civilization. We are now in a period of marked transition. History records no other such wonderful development as that of the United States. No people have ever been so well fed, so well housed, nor have enjoyed such high social standards. No other era is comparable to ours in the production of wealth and no country has seen such a rapid accumulation of riches. Yet our institutions and our methods, by which so much has been accomplished, are being questioned and attacked. Public opinion is demanding a new social order. Insistence upon change is deep-seated and extends much farther than mere political expediency. Change, it is true, is the law of human nature, but why the present widespread unrest? What are its manifestations, its causes, its remedy? These are matters of concern that are pressing upon us. We have been rapidly making history of late, and this nation, whose birth in the family of nations is as of yesterday, is still an experiment in self-government.

### SOME CHANGES OF A GENERATION

Our population to-day is three times what it was fifty years ago, and in that period our wealth has increased ninefold. There has been unprecedented industrial expansion. The cost of the necessities of life has largely increased. The

growth of our farms has not kept pace with the growth of our cities. Our standards of life have been wonderfully altered. Our food products of late have relatively and actually decreased in quantity but have enormously increased in value. Aggregation of capital has reached unparalleled proportions; and our labor, with shorter working hours, is receiving higher wages than ever before. These are some of the changes of a generation. But in our public schools, the very basis of our modern civilization, there has been but relatively little change. It would be hackneyed to say that our greatest institution is our public school were it not that ignorance on the one hand and indifference on the other cause that fact to be too often forgotten.

Our most important industry is the dissemination of knowledge to our youth; and whether the intelligence of American manhood and womanhood is to be high or low, whether efficiency on the farm and in the factory is to be increased or decreased, depend directly upon the strength of our educational system. The character of a nation is the composite character of the individuals making up that nation just as the wealth of a nation is the aggregate of the wealth of its individual inhabitants. Anything, therefore, that makes for the moral and mental elevation and the increased efficiency of our people makes for the moral and industrial superiority of our country. Only by combining a high type of citizenship with material welfare may we hope to command the contentment that makes for orderly progress, and only by proper education may we expect to insure these essentials. What then is our educational system what is its strength, wherein lies its weakness?

#### OUR SYSTEM OF EDUCATION

The school system of the United States consists essentially of a kindergarten period, usually of two years, eight grades of elementary school with a period of eight years, a high school period of four years and a college or professional school period of four years. Graduation from the high school admits to the academic colleges and to most of the

schools of law, medicine, engineering, agriculture, architecture, dentistry and pharmacy, whether in state-supported universities or in privately endowed institutions, such as Harvard and Yale. Under most of our state laws education is compulsory from the age of six to fourteen years inclusive. Nevertheless, of our population of ten years of age or over there were, according to our last census, five and a half millions who were illiterate. The number of pupils enrolled in our public and private schools and colleges in 1910, not including special educational institutions, aggregated over twenty millions, or 21.3 per cent of our total population. Our public schools represent an investment of one and a quarter billion dollars and it costs four hundred and fifty million dollars a year to operate them.

For the promotion of intellectual culture and for professional training our educational system is unexcelled. Our grade schools and our high schools afford a satisfactory preparation for higher education—but higher education is for the few. Of all persons under process of education in 1910, 92.36 per cent were in our elementary grades, 5.98 per cent were in our high schools and other secondary institutions of learning, and only 1.66 per cent were in our universities, colleges and professional schools. This terrific educational mortality is emphasized by the fact that 80 per cent of all our children leave school at fourteen years of age or earlier. These figures plainly prove that the education of the vast majority of our boys and girls is confined to the elementary school where, with but few exceptions, they find little that is applicable to their life's work beyond a primary training in reading, writing and arithmetic.

#### THE NEED OF VOCATIONAL SCHOOLS

A generation ago our schools were much better adapted to meet the requirements of the community than they are at the present day. While then, as now, the grammar school led to the college or professional career through the high school or academy, and elementary training was largely based on the cultural needs of those destined for higher

education, the conditions and the environment were nevertheless quite different. Life was then comparatively a rural existence. Specialization of labor and the modern demands of industry were largely unknown. The apprenticeship system, now largely obsolete, afforded a satisfactory opening to an industrial career, and the office was an efficient threshold to a commercial future. The demands of industry were early responsible for the establishment of the scientific school, and such institutions as the Massachusetts Institute of Technology, Van Rensselaer, Stevens, and others of a similar type are institutions of higher education. Later the manual training school was inaugurated and while much was anticipated from the innovation, it has proved of little value beyond its cultural worth.

As the importance of readjusting our educational methods became more apparent, the necessity of a vocational training that should provide practical instruction in agriculture, commerce, industry and the art of home-making became better appreciated. The National Society for the Promotion of Industrial Education has conducted an active and effective propaganda. The American Federation of Labor and the National Society of Manufacturers have investigated and endorsed the movement. There is legislation pending before Congress providing for national grants of money to states which shall establish vocational schools. Legislation has been enacted in Massachusetts, Wisconsin, Indiana, and several other states. Some work has been done by private initiative, and E. G. Cooley's report on Vocational Education in Europe, compiled and published under the auspices of the Commercial Club of Chicago, is one of the most valued contributions on the subject.

The general plan of vocational education is to add schools to our public school system which shall be designed with a special view of meeting the occupational needs of the community in which they may be located. As is the case with the high school, they should be supplementary to the present grade schools. They should be open to both sexes and should provide instruction both to those who could

devote their time to continuous study and to those who, while at work, could devote a few hours a week to special courses. Part time attendance should be compulsory for all children under sixteen or eighteen years of age who are not in other forms of school.

#### WHAT GERMANY IS DOING

There is perhaps no greater object lesson of the possibilities of vocational training than the phenomenal industrial advance of Germany during the last generation. With but seven per cent of our land area, and with a population thirty per cent smaller than our own, Germany's imports and exports of merchandise in 1910 not only exceeded those of the United States, but surpassed those of all the other nations of the world excepting only the United Kingdom. This has been accomplished primarily because forty years ago German statesmen were sufficiently farsighted and progressive to inaugurate the comprehensive system of vocational education by which the German youth acquire a better training for their life's work than the youth of any other nation. In Germany to-day education is a public duty in which both statesmen and men of affairs actively concern themselves. But interest in vocational education is by no means confined to Germany. England, Scotland, France, Austria, Switzerland, Norway, Sweden and Denmark have all made rapid strides toward remodeling their educational methods and facilities. Perhaps Scotland and Switzerland, after Germany, have done the most effective work in this regard, and in England a great impetus has been given to the movement by the personal interest evinced by Lord Haldane, Lord Chancellor of Great Britain.

#### THE UNITED STATES BACKWARD IN VOCATIONAL EDUCATION

The United States, of all great nations, is the most deficient in caring for the vocational education of its people. Our great educational problem is how to extend the education of the ninety per cent of the children who are in the

grade schools and how best to provide for them a training for civic and industrial intelligence. This is a fundamental question deeply involving our national life.

Fifty years ago we were torn by a struggle of sectional differences. We now have entered a struggle of factional differences which the ballot must decide. The problems that followed our civil war were pre-eminently economic problems directly or indirectly dealing with the development of our natural resources. The development of our agricultural and mineral lands, the opening of waterways, the building of railroads, the replacement of manual by machine labor, the extension of the factory system, were all developments of farm, transportation and manufacture involved in the production of wealth. Our important problems to-day, however, are largely questions of supervision and regulation, and the division of industrial reward rather than the promotion of industry itself. They are still economic questions, but they deal with the distribution of wealth rather than with the production of wealth. People are discontented not so much because there is a lack of opportunity for individual effort as because the natural tendency to question the division of the product of industry is being aggravated by the increased cost of living. Example is a force that goes far toward inducing poverty to vie with opulence. Because no people of any land have ever enjoyed such prosperity as we enjoy minimizes but little the contrast between those of modest circumstance and those of superlative fortune.

Fortunately, we have no such vested rights as exist in some of the older countries to help temper public sentiment by traditional class distinction. We have our classes of society—and there always will be classes with lines of demarcation more or less indefinite—but we have no class into which any one of our citizens may not enter provided he possess the necessary intelligence and economic qualifications. From dependence to self-support, from poverty to riches, are steps to which we in this country put up no legal or social barrier.

## IMMIGRATION

A grave and increasing responsibility is placed upon our educational system by the large immigration that we are receiving from foreign countries. An analysis of our population shows that it is approximately made up of 89 per cent of the white and 11 per cent of the negro races, and that only 54 per cent of our whole population is of native parentage. During the last ten years there has been an average yearly influx of nearly a million aliens. These people represent a most valuable asset in our material growth, but in their proper amalgamation lies that great question of citizenship upon which the future of this country so largely depends. These embryonic citizens are not, as formerly, representatives of the hardy Anglo-Saxon races of the North. It is the Poles, the Slavs, and the Latin people with whom we now have to deal. While they are capable of high character and efficiency, the problem of education and amalgamation in their case is fraught with greater difficulty than if they were racially more closely allied to our ancestry.

The sentiment of a people is more or less reflected by their political affiliations and activities. For a generation we have had two dominant political parties in this country. Over night, as it were, a third party sprang into existence and over four millions of our citizens followed its standard. It is not pertinent to discuss here what may or may not have caused such an unusual political departure or whether the principles enunciated by the new party are new or old, desirable or undesirable. The fact is given as evidence that there is an extensive desire for change which neither the influence of personal magnetism nor the possible dereliction of party duty can explain. Further evidence is found in the rapid growth of socialism.

## SOCIALISM

In 1912 the Socialist party polled in this country more than twice as many votes as it did in 1908. Twenty years ago the Socialist party cast 21,000 votes. Last year they polled nearly 900,000 votes. The growth and purpose of



socialism abroad is largely due to conditions peculiar to the old world. The purpose of socialism in this country is recorded in their late party platform which ends as follows: "Such measures of relief as we may be able to force from capitalism are but a preparation of the workers to seize the whole power of government, in order that they may thereby lay hold of the whole system of socialized industry and thus come to their rightful inheritance."

The menace of socialism can be minimized by a vocational training which will increase the intelligence and future earning power of our children. It is not difficult to inculcate the fundamental principles of industrial economics in an elementary way, and it does not require a mature mind to comprehend that the source of all wealth is the soil, that wealth can only be produced by the joint effort of capital and labor, that there always will be differences in individual character and ability, and that no social plan can be maintained which goes contrary to these basic truths.

#### SOCIAL AND INDUSTRIAL CHANGES

If public opinion is to be directed through constructive channels, it must be in part by promoting a wider knowledge of the economic and industrial changes that have been taking place and by commanding a better appreciation of their influence upon society. In the last few years there has been a striking change in our rural and urban population. From 1900 to 1910 the population of the United States increased 21 per cent. During this period the rural communities gained 11.2 per cent and the urban 34.8 per cent. As an economic and social necessity, it behooves us to increase wherever possible the interest of our people in our farms. How much we have relatively fallen behind in our agricultural life is partially shown by the fact that we should now have two and a half millions more people engaged in farming had the number that were so engaged thirty years ago been proportionately maintained. While from 1900 to 1910 our population increased 21 per cent, during the same period the number of our farms increased but 10.9 per cent, our

total farm acreage increased 4.8 per cent, and the increase of our crop production was in volume only 10 per cent. In the last five years the number of sheep in this country has actually decreased more than three millions and the number of cattle has decreased more than fifteen millions. As a natural sequence, the value of our food products and the value of our farm lands have greatly increased.

Much of the soil of Europe, which has been under cultivation for centuries, is producing by methods of intensive farming, more than double the amount that our comparatively virgin soil is producing. For the period 1903 to 1912 the average yield of wheat per acre in the United States was 14.1 bushels as compared with 30.1 bushels in Germany and 31.7 bushels in the United Kingdom.

These facts have an important bearing upon the necessity of providing vocational schools in the agricultural districts which shall be supplemental to the present country schools and which shall be equipped for practical instruction in such elements of scientific farming as fertilization, rotation of crops, drainage and breeding. If we are to extend our rapidly approaching limit of agricultural home maintenance, we must dignify agricultural labor and make it more productive.

#### OUR FOREIGN COMMERCE

The social character of a community in all ages has been profoundly influenced by the degree of its material prosperity. The prosperity of this country is bound to be influenced to an accelerated degree by the extent of its foreign commerce. The share which manufactures form in our exports and which manufactured materials form in our imports has largely increased during recent years. The total value of our exported manufactures increased in round figures from one hundred and twenty-two million dollars in 1880 to ten hundred and twenty million dollars in 1912. On the other hand, the total value of foodstuffs exported in 1912, amounting to four hundred and nineteen million dollars, was actually forty-one million dollars less than the value of foodstuffs

exported in 1880. Perhaps more impressive are the figures showing the change in percentage which foodstuffs and manufactures, respectively, bear to our total exports. From 1880 to 1912 our foodstuffs fell from 55.77 per cent of our total exports to 19.29 per cent. In the same period our manufactures increased from 14.78 per cent of our total exports to 47.02 per cent.

This great change in the character of our export trade reflects our rapidly changing industrial conditions. If we are to continue to successfully compete in the markets of the world and still maintain the American standard of wages in the face of the low wages of foreign countries, we shall not only need a comprehensive system of industrial education, but shall also require the economies which are possible only through the concentration of business. How much the latter has already influenced our foreign trade is partially exemplified by the increase in our exports of iron and steel. In 1890 the value of our iron and steel exports was twenty-five million dollars; in 1912 their value was over a quarter of a billion dollars.

But concentration of business is being attacked as monopolistic. Those who fear the danger of monopoly should remember that business concentration is an important factor in modern industrial development, and that monopoly is but a preventable perversion of its great power for social progress. Between the evils of monopoly on one hand and the waste of unrestricted competition on the other, there is a zone for concentration and co-operation that should be within the law. Concentration of business through large corporations, with its resulting increase in efficiency and the elimination of waste, is an economic necessity which can no more be successfully replaced by small units of activity than can the power loom of the factory be successfully replaced by the hand loom of the home.

If we are to properly build up our commerce, we must better develop our latent industrial possibilities. There are to-day hundreds of thousands of children between fourteen and sixteen years of age who, for want of proper educational

incentive and opportunity, are either idle or without fixed employment. A system of education which would provide for these children in our commercial and industrial centers an opportunity for instruction in drawing, accounting, dress-making, millinery, stenography and trade activities would go far toward decreasing the number of our social derelicts.

### HIGH COST OF LIVING

The method of living of our so-called plain people is on a much higher plane than has existed in any other nation or in this country at any other time. We properly have been concerned of late with the rapid increase in the cost of living. The movement is world-wide, but perhaps its influence upon existing social conditions is nowhere so strongly emphasized as in this country. Although the results of our high cost of living are largely social in their effect, the causes are principally economic in their character.

That the high cost of living is due to the cost of high living is an aphorism that represents but a partial truth. Our people, it is true, live on a much more extravagant scale than ever before; but it is also true that food, raiment and habitation cost much more than heretofore. Any intelligent discussion, therefore, of the reasons leading to the increased cost of our manner of living must take into consideration two factors—first, the increased cost of necessities; second, the increased cost of luxuries. It is obvious that the causes leading to the increased cost of our necessities are many and complex. There are, however, two basic causes for their increased cost:

*First:* The decrease in the number of men engaged in producing our necessities from the soil in proportion to our total inhabitants.

*Second:* The cumulative effect of increased wages throughout the country.

With equal efficiency, no standard of living made possible by the wealth produced by ten hours of labor in the factory or on the farm could be maintained with fewer hours, unless wages or the value of the product be increased. As

a nation we are proportionately working fewer hours than ever before, and we have a greater number of the inefficient and the idle in our midst. Between 1900 and 1910 the average price of land increased from \$15.57 per acre to \$34.40 per acre. The result of proportionately fewer men working shorter hours with more valuable land has been an increased cost for which labor-saving devices have not compensated. These are the underlying economic conditions which through the natural law of supply and demand are responsible for the increased cost of the necessities of life.

The other and perhaps more influential factor in our high cost of living is the increased cost of luxury. The demand for luxury is a manifestation of prosperity and is bred from an innate desire for comfort, power and prestige. It is both material and psychological in its character, and is an ever-expanding force in our modern civilization with which the sociologist and the economist must frankly deal. It has put a strain upon our whole social and industrial fabric that would have been deemed impossible a generation ago. Can any one rightfully question the vital bearing that education has on these matters or doubt the necessity of obtaining greater agricultural and industrial power through a comprehensive system of vocational training?

The nation's welfare can be maintained only by increasing the productiveness of its labor and by judiciously directing it in reproductive channels. Labor expended in the fields or in the manufacture, transportation or distribution of the necessities of life is reproductive. But labor expended in the production of luxuries is principally lost in an economic sense.

Our latest large industry, the manufacture of the automobile, is more or less illustrative of this point. According to an investigation made by the Automobile Magazine, there were in this country at the beginning of 1913 over 1,000,000 registered machines, less than 55,000 of which were commercial cars. Last year we produced 378,261 cars, with a sale value of \$542,500,000. On the basis of the

average value of last year's output, the value of all the cars registered in this country would be approximately \$1,500,000,000. If we assume that \$500 per car per year approximately represents the cost for maintenance and operation, it appears that it costs \$500,000,000 annually to operate these machines. *This is more money than is spent each year in operating the entire public school system of the United States.* These figures are startling, especially when we learn that only six per cent of all these cars is for industrial use, and ninety-four per cent is essentially devoted to purposes of recreation.

In the development of the commercial car, however, the automobile industry is destined to be the source of great reproductive activity and hence an important agent in the future production of wealth, although its result thus far is largely represented by the opportunity it affords for luxurious recreation. Reasonable recreation and reasonable luxury are essential for the best ethical development, but the price has to be paid, and the bill is found in our high cost of living.

## SUMMARY

It is evident that we are passing through momentous changes. The decline of agriculture and the growth of industrialism, the increased cost of living and the change in our methods of living, are some of the causes that have produced the present widespread demand for a new social order. We are facing many serious economic and industrial problems, the proper solution of which is important to the capitalist and vital to the wage-earner. If we are to have orderly progress, we must command a high standard of national character and intelligence, and this means a better and more universal education.

The educational problem that faces this country to-day is not primarily a school-teacher's problem. Rather does it demand the initiative and co-operation of the earnest, intelligent layman. If our schools are to be truly democratic, if the needs of our modern life are to be properly reflected in the education of our boys and girls, our men of business and our men of labor must more thoroughly recognize their educational obligations.

Vocational education is not a passing social expedient, but one of our most far-reaching national questions. It means not only greater industrial efficiency, but also increased economic truth, morality and civic duty. It is not a question for coming generations alone. Every year more than a million of our youths attain their majority, and the children of fourteen years, with whom we are especially concerned, will within seven years come into their political rights. Our nation is one of political freedom, and very rapidly our people are coming to better appreciate the extent of their sovereign power. Let us remember that what our laws and institutions shall be must depend upon the will of the people, and this will depend largely upon the character of their education.

You, gentlemen of the Iron and Steel Institute, are essentially interested in the industrial questions of this country; but back of our industrial questions lie our political, ethical and social questions, and underlying all—and greater than all—are our educational questions. If you believe that we are in the midst of a far-reaching change, if you believe that this transition is fraught with grave importance to you, your children and your institutions, if you believe that only by sane thinking, sober judgment and trained intelligence can the dangers of ignorance, intemperate speech and class legislation be avoided, then it behooves you to use your influence toward providing better educational facilities for the people. While every true American must have faith in the ultimate satisfactory adjustment of our difficulties, the situation demands more than optimistic indifference or *laissez-faire* consideration. Once let the business men of this country properly awaken to the needs and possibilities of a school reformation and contribute a portion of the time and money now spent in trying to forestall socialism and vicious legislation, and there will be much less socialism and vicious legislation to fight. In the best interests of both labor and capital, and as a matter of patriotism, civic duty and business sagacity, it should be a privilege for every intelligent man—whether he be rich or poor—to take an active part in improving America's greatest institution, the public school.

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